Difference in Intrasession Rate of Perceived Exertion during Resistance Training Designed to Achieve Different Physiological Adaptations

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ABSTRACT

The OMNI RPE scale (1 – 10 scale), specifically session RPE (sRPE), is recognized as a validated tool for assessing internal stress for upper- and lower-body resistance training exercises. While RPE is prevalent within the resistance training research, to the best of our knowledge, no study has investigated training goals specific (i.e., strength, power, hypertrophy, endurance) intrasession RPE measures. **PURPOSE:** Therefore, the aim of the current investigation was to examine differences in intrasession RPE across 4 distinct resistance training sessions for upper- and lower-body exercise. **METHODS**: Participants (age 20.64 ± 1.29 yrs; ht 169.95 ± 5.26 cm; wt 77.27 ± 8.37 kg; male = 8; female = 3) with 6 months of resistance training experience performed 5 resistance training sessions. Session 1 consisted of one-repetition-maximum (1RM) testing for the barbell bench press (BP) and barbell back squat (SQ) and served as a familiarization session for the OMNI RPE scale. In randomized session order, sessions 2 – 5 were structured to achieve 4 different training adaptations: strength - 6 sets of 2 repetitions at 90% 1RM (3-minute rest between sets), power - 6 sets of 3 repetitions at 80% 1RM (3-minute rest between sets), hypertrophy - 4 sets of 8 repetitions at 70% 1RM (90s rest between sets), and endurance - 3 sets of 15 at 55% 1RM (30s rest between sets). Rate of Perceived Exertion was assessed immediately after the completion of each set (intrasession RPE) and 30 minutes after session completion (sRPE). A 2 (exercise) x 4 (training mode) Mixed Factorial ANOVA ($p < .05$) was employed to explore the difference in average intrasession RPE for SQ and BP. A One-way ANOVA ($p < .05$) was used to assess sRPE differences between training modes. **RESULTS**: A significant main effect ($p < .001$) was observed between average SQ and BP intrasession RPE. Bonferroni post-hoc tests identified significant RPE difference between endurance and hypertrophy (7.15 ± 2.15; 5.80 ± 1.90; $p = .004$), endurance and power (7.15 ± 2.15; 5.01 ± 1.44; $p < .001$), and strength and power (6.469 ± 1.56; 5.015 ± 1.44; $p = < .001$) for SQ. Additionally, a significant difference in RPE for BP was identified between endurance and hypertrophy (6.93 ± 2.34; 5.59 ± 2.21; $p = .016$), endurance and power (6.93 ± 2.34; 4.39 ± 1.41; $p = <.001$), hypertrophy and power (5.59 ± 2.21; 4.39 ± 1.41; $p = .009$), and strength and power (5.96 ± 1.92; 4.39 ± 1.41; $p < .001$). **CONCLUSION:** In support of previous reports, these data suggesting training mode and musculature effect RPE. Specifically, higher RPE was achieved during endurance training and when activating the lower extremities. Opposingly, power training was perceived as the least exerting mode of training. Alternative to standard repetition prescription, these established training goal specific RPE averages may serve as an intrasession modulator by utilizing RPE as an exercise set termination target.